

University of Colorado at Denver and
Health Sciences Center
Anschutz Medical Campus
Aurora, CO
(UCDHSC)

Neuroscience Training Program

Handbook of Policies and Information

Revised August 2007

*This book is a supplement to the Graduate Student Handbook prepared by the University of Colorado Health Sciences Center Graduate School and to the Course book prepared by the UCHSC Office of Admissions and Records. **Students are responsible for knowing the procedures, policies and requirements outlined in all three publications.***

NEUROSCIENCE TRAINING PROGRAM POLICIES AND INFORMATION

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NEUROSCIENCE TRAINING PROGRAM POLICIES AND INFORMATION

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1.0 Admission to the Program. Students seeking admission into our program should have an undergraduate degree or its equivalent and have taken the Graduate Record Examination (GRE). Foreign students must also take the Test of English as a Foreign Language (TOEFL). A baccalaureate degree in either a biological science, chemistry, physics or engineering is recommended. Applicants are strongly encouraged to take an undergraduate level biochemistry course. Students will be more favorably viewed for admission if they have Graduate Record Examination percentiles of 65 or higher. There is no absolute requirement for grade point average above that required by the graduate school, but successful applicants will generally have GPAs above 3.2 (A=4.0). Undergraduate research experience is strongly recommended. Students with deficiencies may be admitted, but these must be rectified during the first year.

It is the continuing policy and commitment of the Graduate School of the University of Colorado to provide equal opportunity for qualified students without discrimination with regard to race, color, sex, religion, age, national origin or disability and to welcome such students to make application for admission to its graduate programs.

2.0 Student Support. At present, students accepted in the Ph.D. program are provided full tuition, health insurance, and a stipend of \$23,500 per year for living expenses (for the academic year 2007-2008). Continued support is contingent upon satisfactory academic and research performance by the student. When a student enters a thesis lab, the thesis mentor assumes complete responsibility for the student's stipend, tuition, fees, and associated research costs. Out-of-state tuition is paid only in the first year. **All students must establish Colorado residency by the summer of the first year.**

3.0 Student Advising. During the first year, Neuroscience students will meet with members of the Graduate Training Committee (GTC) on a rotating basis to discuss the student's progress in the Program and any questions that may come up. Students will be expected and encouraged to seek advice from the GTC, Director, and/or other Neuroscience faculty members prior to lab rotations, Comprehensive Examination, and at other times when the student requires faculty consultation.

4.0 Training Program. The program's goal is to provide a broad and solid foundation of understanding in neuroscience, and to train critical thinkers who identify important problems, generate experimentally testable hypothesis, and who draw significant conclusions from results of their ongoing research in a specific area of neuroscience. In addition, we aim to foster development of students who approach research in a responsible, professional manner. After the initial period of coursework, students choose their

specialty fields from a diverse list of topics. They proceed with research in their specialty areas until the generation and defense of a thesis leads to the award of a Ph.D. in Neuroscience.

There are three tracks for entrance into the Neuroscience Program: some students enter directly into the NSP (neuroscience track), while others transfer from BSP (BSP track) or MSTP (MSTP track). The year by year curriculum for students who enter the Neuroscience Program directly is discussed in the following sections. Subsequently, the differences in training for those students who join the NSP through the BSP and MSTP tracks are discussed in section 4.4.

4.1 YEAR 1: Coursework, Laboratory Rotations and Preliminary Exam.

4.1.1 Required Coursework for Year 1.

FALL SEMESTER – YR 1

NRSC – 7600 Cellular and Molecular Neurobiology 3 units
Course Director: Dr. Nathan Schoppa

Covers how nerve cells go about their business of transmitting signals. Required textbook: From Neuron to Brain, 4th Edition. *A Cellular and Molecular Approach to the Function of the Nervous System*. Nicholls, JG, Martin, AR, Wallace, BG. Sinauer Associates, Inc., Publishers.

IDPT 7801, 7802, 7803 Biomedical Sciences Core 10 units
Course Directors: Drs. Robert Murphy, James Hagman and Robert Evans

This course covers structural, molecular, and cell biology.

NRSC – 7660 Neuroscience Seminar No credit
Course Director: Dr. John Caldwell, Chair, Seminar Committee

Seminar series designed to present recent important findings in Neuroscience research. Different topics are presented weekly by Neuroscience Training Program faculty, students and visiting faculty. **First year students are required to attend the seminar** and all other students are strongly encouraged to attend on a regular basis.

NRSC –7650 Research in Neuroscience (Lab. Rotations I and II) 1 unit each
Coordinated by the Graduate Training Committee, Dr. Sukumar Vijayaraghavan, Chair.

Students will perform research in the laboratory of one of the members of the program. The rotation will be followed by an oral presentation. Each rotation will occupy 6 weeks. Rotation II will begin near the end of the fall semester (in November) and end early in the spring semester (in February).

SPRING SEMESTER

NRSC 7610 Fundamentals of Neuroscience (Begins in early January) 5 units
Course Directors: Drs. Thomas Finger and Diego Restrepo

Lecture, laboratories and manuscript discussions to provide basic knowledge of the structure and function of the nervous system. Recommended textbooks: Kandel and Schwartz.

NRSC – 7615 Developmental Neurobiology 3 units
Course Director: Dr. Angeles Ribera

Course will cover topics in the development of the nervous system, such as neuronal birth, migration, differentiation, and death, axonal pathfinding, cell-cell recognition, and synapse formation, modulation and elimination. Part of the course is devoted to the discussion of original literature in the field.

NRSC – 7661 Grant-Writing Workshop

1 unit

Course Directors: Drs. Rock Levinson and Tom Finger

A practicum in how to read and write a grant proposal with emphasis on the NRSA pre- and post-doctoral fellowship applications.

NRSC – 7660 Neuroscience Seminar

No credit

Course Director: Dr. John Caldwell, Chair, Seminar Committee

Seminar series designed to present recent important findings in Neuroscience research. Different topics are presented weekly by Neuroscience Training Program faculty, students and visiting faculty. **First year students are required to attend the seminars** and all other students are strongly encouraged to attend on a regular basis.

NRSC – 7650 Research in Neuroscience (Lab. Rotation III) 1 unit

Coordinated by the Graduate Training Committee, Dr. Sukumar Vijayaraghavan, Chair.

Students will perform research in the laboratory of one of the members of the program. The rotation will be followed by an oral presentation.

4.1.2 Laboratory Rotations in the First Year. Rotations serve several important purposes. First, they enable the student to explore and compare several areas of neuroscience research and aid in the choice of a mentor and project for thesis work. Second, rotation seminars provide intense training in the craft and art of public presentation, an essential aspect of future career success. Third, they allow program faculty to evaluate the motivation and intellectual preparedness of students to undertake independent research.

4.1.2.1 Number of Rotations. Students must perform 3 rotations of 16 weeks each before the start of their second year. Students should start their first rotation in the Fall Semester. Optionally, students may start a rotation during the summer before formal entry into the Program. MSTP students take two rotations (during the summers of the first and second year of Medical School).

4.1.2.2 Choice of Mentor/Laboratory. First and foremost, students should choose laboratories and projects that are reasonable possibilities for a student's thesis work. Students should avoid rotations whose main goal is the acquisition of new techniques; there will be plenty of opportunity to learn methods informally among the Program laboratories as the need arises. Often, however, a student may be able to make a firm choice of mentor before the required rotations are completed. In this case, the student is encouraged to explore other areas of research unrelated to the student's primary interests.

Students should be aware that mentors and their groups put considerable effort into supervision of rotating students. Thus, some faculty may be reluctant to take on a rotation if they have extensive travel plans, teaching, grant writing, or if the student is already committed to another mentor. In addition, the Program allows only a single neuroscience rotation student in a lab at any time. For these reasons, it is imperative that students arrange for rotations as far in advance as possible. In any case, the final decision must be prior to the start of the rotation. Students are strongly advised to obtain input from their first year GTC advisors and/or the Chair of GTC before deciding on rotation labs.

4.1.2.3 Limitation on numbers of rotating students. To help ensure adequate supervision, no other student from the Neuroscience Program may be doing a research rotation in the laboratory of the mentor during the period

4.1.2.4 Rotation Initiation Form. Both the student and mentor must sign and submit to the Neuroscience Program office a Lab Rotation Initiation Form (see Appendix) describing the project. **This form must be turned in to the chair of GTC prior to the start of the rotation.** At this juncture the student will rehearse the rotation seminar with his/her first year GTC mentor who will also provide the student with feedback from GTC at the end of the rotation. The chair of GTC will provide the student with a rotation evaluation form that the rotation mentor will use to evaluate the student's rotation.

4.1.2.5 Duration of Rotation. All rotations will span a period of 16 weeks. The dates for the post-rotational talks will be decided by the Graduate Training Committee and are posted on the Neuroscience web site (<http://www.uchsc.edu/neuroscience> under "seminars"). Ability to organize and perform experimental work given normal schedule constraints is an important part of the evaluation process for these rotations. Further, it is our experience that seminar performance difficulties arise when a student delays a presentation too long after the actual rotation. The GTC, in conjunction with the Seminar Committee, will assign each student a fixed date and time for each presentation. This will normally be Wednesday at noon or Thursday at the regular seminar time. No extensions to the duration of laboratory work or changes to the previously assigned seminar date will be given, except in exceptional circumstances (e.g. severe and prolonged illness). In this regard, it may help to view the rotation as a normal course with a final exam (i.e. the rotation seminar).

4.1.2.6 Performance Expectations and Grading Policies for Rotations. Given the unpredictable nature of scientific progress, it is not expected or required that students complete all goals proposed at the start of their rotations. However, rotation projects should be thoughtfully designed in consultation with the mentor so that a reasonable prospect for scientific progress exists. In any case, students are expected to spend significant effort toward achieving their prolonged goals, and if progress is difficult, to be able to explain the nature of the problems involved.

4.1.2.7 Effort. For professionals in training, it is not appropriate to require a minimum number of hours for rotation work. Strong self-motivation is an absolutely essential characteristic for an independent scientist, and we expect our students to demonstrate this quality throughout their training. In this regard, students should expect to be in the lab beyond the normal working hours, i.e. at evening, on weekends, and possibly over vacation days during the term. This commitment of time is especially important when long, complex experiments are being done. A major part of the mentor's rotational assessment (as well as his/her willingness to accept a student) will be based on the degree and quality of lab effort. Students should always discuss time off and/or vacation days with their lab mentor in advance, both in their lab rotations and once they enter a thesis lab.

4.1.2.8 Rotation Seminar. At the end of the rotation the student will present a seminar. The purpose of the seminar is to provide intense training in the craft and art of public presentation, an essential aspect of future career success. Rotation seminars are 15 min in length. The student will rehearse the seminar with one of the GTC members prior to the public presentation.

4.1.2.9 Rotation Seminar Guidelines. The seminar is an essential component of the research rotation. Students are expected to present a well-organized, clear, and thoughtful seminar. Students should consider the following elements when designing their presentation (although the order need not be strictly followed):

Introduction - a short statement of the question or problem addressed by the rotation.

Background - describe the significance of the question in broad terms for a diverse audience.
Describe previous work and its relationship to the project.

Specific experimental aims - what were the particular experimental goals proposed to address the hypothesis?

Methods and Design - explain any unusual strategies or techniques employed.

Results.

Conclusions and future directions.

4.1.2.10 Suggestions for Effective Seminars

1. Avoid reading or memorizing your presentation if at all possible. Wooden, canned deliveries are dull and very hard for audiences to follow.
2. Prepare and use simple, effective visual aids. Remember that effective communication of data and ideas is your goal! Do not spend undue effort on fancy multicolored slides (especially for text) if color is not required to simplify complex data or concepts. Keep text very brief and do not read directly from the screen (audiences are much faster at reading silently!).
3. Use the marker board when appropriate. Diagramming or outlining while you are talking is a highly effective means of explaining concepts difficult to describe with the spoken word. Use of the marker board can also help answer spontaneous questions from the audience.
4. Consider audience questions carefully! Both faculty and students are encouraged to ask questions during and after rotation seminars. A few of these questions may be intended to probe your understanding of your research rather than illuminate an area of confusion. Part of your evaluation will concern your effectiveness in responding to questions. Thus, make sure that you understand the question before answering. Repeat the question or ask for a rephrasing if you need to. Second, relax and take a moment of silence if you must before answering to formulate a coherent answer. Third, if after contemplation you don't know the answer, don't be afraid to say so. We all get stumped from time to time!

4.1.2.11 Grading the Rotation. Immediately after the seminar session the GTC will meet and evaluate the rotation on the basis of the written feedback from the mentor as well as seminar evaluation forms (see Appendix). The student will subsequently be informed by the GTC member assigned at the beginning of the semester of the final grade, strengths and weaknesses in laboratory and seminar performance, and may be given suggestions for improvement. Students will be expected to show improvement to identified weaknesses in subsequent rotations and seminars. Failing a rotation (B- or below) will be considered a serious academic deficiency that may require further action by the GTC (see Academic Standards).

4.1.3 Transfer to Thesis Lab at End of First Year: An important aim of the rotations is to enable the student to find a thesis mentor. After the completion of the three rotations for regular graduate students or two rotations for MSTPs, the student should come to a mutual agreement with a faculty member to act as thesis mentor. The chair of the GTC and the Program Administrator should be notified on the choice of mentor on or before June 15th of the first year. Official transfer to the thesis lab takes place on July 1st. Under exceptional circumstances and at the discretion of the GTC, a student may be allowed to perform an additional rotation for the express purpose of enhancing the mentor selection process.

The Graduate Training Committee must formally approve the choice of thesis mentor (See thesis proposal form in the Appendix). The student and faculty member together plan a thesis project. Doctoral level work requires a close collaboration with a faculty mentor. It is the responsibility of the student to establish and maintain that relationship. Continuation in the PhD program depends upon identifying a mutually agreeable thesis laboratory.

4.1.4 Preliminary Exam at the End of the First Year: Material covered in first year courses will be tested in an open book examination. The exam consists of two parts, each tested on a different day. Part I tests

material relating to IDPT 7801, 7802 and 7803 (structure, cell and molecular biology), and Part II tests material relating to NRSC 7600, 7610 and 7615 (neurobiology). Each of the two exams will be graded on a scale from 0 to 100, and an overall grade will be calculated through a weighted average of Parts I and II. The average will be weighted by the number of credits in the classes whose material is included in each of the two exams. The student must obtain an overall grade of 70 or better to pass the preliminary exam.

4.2 YEAR 2: Coursework, Pre-Thesis Research and the Comprehensive Examination.

4.2.1 Coursework in Year 2.

SUMMER – YR 2

NRSC –7650 Research in Neuroscience **1 unit**

Course Director: Dr. Diego Restrepo

Laboratory research with Neuroscience Training Program faculty.

FALL – YR 2

PHCL – 7605 Ethics in Research **1 unit**

Course Director: Drs. Jim Sikela and Jim Stevens

Course is designed to introduce issues around ethics of research, publication, and reviewing of manuscripts and grants.

NRSC –7650 Research in Neuroscience (Pre-comps) **3-6 units**

Course Director: Dr. Diego Restrepo

Laboratory research with Neuroscience Training Program faculty.

Elective* (3-4 units)or

NRSC – 7670 Advanced Topics in Neuroscience* **1 unit**

Course Director: Dr. Diego Restrepo

Course will focus on specific topics each semester.

SPRING – YR 2

NRSC –7650 Research in Neuroscience (Pre-comps) **3-6 units**

Course Director: Dr. Diego Restrepo

Laboratory research with Neuroscience Training Program faculty.

Elective* (3-4 units)or

NRSC – 7670 Advanced Topics in Neuroscience* **1 unit**

Course Director: Dr. Diego Restrepo

Course will focus on specific topics each semester.

- **One Elective or Advanced Topics Course per year is recommended in year two through the completion of the Ph.D.** (These are in addition to the required thesis hours)

4.2.2 Thesis Proposal Form. Before the end of the fall semester in the second year the student should submit to the GTC a Student Thesis Proposal form signed by both the student and the thesis advisor, and attach a brief one-page overview of the proposed thesis research. This overview should include a paragraph of background and significance, a clearly stated hypothesis to be tested and at least two specific aims, each supported by one or two sentences describing the experimental approach.

4.2.3 Comprehensive Exam. At the beginning of the second year of study Neuroscience graduate students will begin preparing for the Comprehensive Exam. It is highly recommended that the student carefully read the Graduate Student Handbook on Comprehensive Examination policies and deadlines, and pick up a packet of instructions and forms from the Graduate School well ahead of the planned examination so all required paperwork can be completed on time. Complete paperwork must be submitted to the Graduate School no later than two weeks prior to the examination date. Please make copies for the Neuroscience Program to be placed in your official file. Official forms can be found on the Graduate School website (www.uchsc.edu/gs). A link is also provided on the Neuroscience website. **Note:** A student must be registered at the time he/she takes the Comprehensive Examination.

Students should take the Graduate School Comprehensive Examination for admission to candidacy for the Neuroscience Ph.D. by the end of the summer of their second year. The Comprehensive Examination Committee shall consist of a minimum of five Graduate Faculty members. At least one of the members must be outside the Program's core training faculty. The majority of the members, including the chair, must be from the core training faculty of the Neuroscience Program. The student's dissertation advisor may not chair the examination committee. The student should provide the GTC with the names of seven potential committee members and discuss with the GTC the committee's composition. *The GTC and the Graduate School must approve the Thesis Committee composition prior to scheduling the examination.*

The examination will have as its focus a thesis research proposal written by the student using the format of a NIH grant application. Although preliminary data collected by the student is helpful, it is not essential for the proposal. The written proposal should be distributed to the Comprehensive Examination Committee at least two weeks prior to the examination. The student must adequately demonstrate the scientific knowledge and ability to defend this proposal, as well as satisfying the overall requirements for the examination as set forth by the UCHSC Graduate Student Handbook. The examination will consist of a 30-45 minute seminar by the student, general questions from the audience and then detailed questions from the Comprehensive Examination Committee. As stated in the graduate student handbook, the comprehensive examination "will test your mastery of a broad field of knowledge, not merely the formal course work completed." The student should consult with his or her committee members prior to the exam as to the subject areas each member expects the student to have mastered.

Once a student has passed the Comprehensive Exam, he/she should register for Neuroscience Doctoral Research (NRSC 8990) instead of NRSC 7650.

4.2.3 Teaching Assistant. All graduate students are strongly encouraged to be a Teaching Assistant for one semester during their graduate training. This assistantship may be in the Medical Neurobiology class or arranged with the Course Director in the Neuroscience Core courses.

4.3 Third Year and Beyond

4.3.1 Coursework

NRSC 8990 - Neuroscience Doctoral Research – Summer, Fall, and Spring
Course Director: Dr. Diego Restrepo

Students will generate an original body of research that constitutes a significant contribution to the field of neuroscience. Suitability of thesis research is judged by the Thesis Committee. Students write a Ph.D. thesis and defend the document at an oral examination.

Elective (3-4 units) or

NRSC – 7670 Advanced Topics in Neuroscience*

1 unit

Course Director: Dr. Diego Restrepo

Course will focus on specific topics each semester.

* One Elective or Advanced Topics Course per year is recommended in year two through the completion of the Ph.D. (These are in addition to the required thesis hours)

4.3.2 Ph.D. Thesis. After passing the Comprehensive Proposal, the student enters Ph.D. candidacy. During the following years the students perform research towards a thesis defense. Students will give annual reports on the progress of their thesis research to the Neuroscience faculty in the form of 30-minute seminars, and meet at least bi-annually with their Thesis Committee. The Chairman of the Thesis Committee will meet with the GTC to discuss the student's progress and will submit a brief written summary of the outcome of each meeting with the student.

Upon completion of a body of original research that constitutes a significant contribution of new knowledge to the field of Neuroscience, students will write a Ph.D. thesis containing this information, and defend this document at an oral examination scheduled by the UCHSC Graduate School. **A student will not be allowed to defend the thesis unless s/he has submitted for publication at least one first author research manuscript.**

The student will submit a final version of his/her thesis to the thesis committee **six** weeks prior to the anticipated date of defense. The committee will then have two weeks to let the student know if he/she can go ahead with the oral defense. The student may defend in the face of the thesis committee's disapproval, provided he/she knows the risks involved.

Check with the Graduate School for current deadlines, thesis format requirements and required paperwork prior to writing the thesis and scheduling the defense. (Students must be registered in NRSC 8990 to defend.)

4.4 Curriculum for BSP and MSTP Track Students

4.4.1 MSTP and BSP Students. MSTP and BSP students will take the Biomedical Sciences Core Course (IDPT 7801, IDPT 7802 and IDPT 7803) in the fall semester of the first year. They will be asked to take a total of at least five credits of Neuroscience Courses before their comprehensive exam through any combination of the following courses:

NRSC 7600. Cellular and Molecular Neurobiology (3 credits, fall)

NRSC 7610. Fundamental Neurobiology (5 credits, January-March)

NRSC 7615. Developmental Neurobiology (3 credits, spring semester)

2 credits of one-on-one tutorials, or Advanced Topics Neuroscience courses, or other Graduate School courses approved by the Neuroscience GTC.

In the case of Graduate School courses, students will be able to choose from an array of courses that are offered. Potentially suitable courses in the Spring Semester include Receptors & Cell Signaling (PHCL 7606) and Molecular Basis of Neuropsychiatric Disorders (NRSC 7614). The ultimate decision on courses will be made following consultation with the GTC, which will consider factors such as the thesis lab that a student is joining and gaps in prior studies.

The 5 credit requirements can be fulfilled in several different ways. For example, the student can take NRSC 7610 (5 credits which starts in January and goes to March). Alternately, the student can take the 3 credit course NRSC 7600 in the fall of the first or second years (most likely during their first full year in the lab) and fulfill the other 2 credits by one-on-one tutorials (taken under the Advanced Topics heading), larger-group Advanced Topics courses, or other Graduate School courses (which would be taken under the Advanced Topics heading) or any other larger-group Advanced Topics course.

BSP and MSTP students will take Part I of the Preliminary Exam, as well as Part II if he/she has taken any other courses in the first year. The overall grade for the Preliminary Exam at the end of year 1 will be calculated as a credit-weighted average of the grade in the two exams (Parts I and II) as explained in detail in section 4.1.4. A pass in the Preliminary Examination at the end of the first year is required for transferring into the program. If they elect to take one or both of the required Neuroscience courses in year two, the final grade for these courses will be used to compute a final grade for the preliminary exam, using the credit-weighted average method. Failure to obtain a grade of 70% or better in the overall grade for the Preliminary Exam will result in a thorough review of the student's entire performance in the Program, with a recommendation for dismissal a possible outcome.

MSTP and BSP students are welcome to join the student-led journal club (Tuesdays at noon).

4.4.2 MSTP Students. The MSTP students can choose either the Neuroscience curriculum or the BSP curriculum.

5. Academic Standards for Neuroscience Graduate Students. Applicants to the Graduate Program in Neuroscience are highly screened and rigorously evaluated for their potential to become creative and independent scientists. This means that each student in the Program was admitted with the Faculty's full confidence in their ability to complete training requirements for the Ph.D. Thus, the Program does not operate to select or wash out students during training. Rather, we regard any dismissal or withdrawal as a serious detriment to the success of our program, and a situation that we will do our best to avoid.

However, it infrequently happens that a student will fail to satisfy the Program standards and expectation for academic performance. Given the importance and intensely competitive nature of biomedical research, as well as our commitment to the future of our students, such instances invoke serious concern from the Program. Students should be assured that in an initial instance of failure the Program will do its best to help the student to remediate failure. However, multiple deficiencies indicate a poor prognosis for future success and demand close examination of a student's tenure in the Program.

The GTC is charged with maintaining the academic standards and with evaluating the ability of students to continue with the training in cases of failure. The Academic Standards of the Program are described below, as well as the procedures used by the GTC to deal with performance deficiencies.

5.1 General Graduate School Standards

Naturally, the minimal standards of the Graduate School must be satisfied. These are:

1. Maintenance of a 3.0 GPA at all times. Less than a 3.0 cumulative GPA puts the student on a two semester probation. During this time, the student must raise the overall GPA to 3.0 while achieving a 3.0 GPA for each probationary term. Failure to satisfy this requirement may result in dismissal from the Program.
2. Passing grade on the Comprehensive Exam. A grade of "Fail" on either the Comprehensive or Dissertation Defense exams results in dismissal.

5.2 Additional Standards for Neuroscience Graduate Students

1. Students must achieve grades of B or better in each required course in Neuroscience. **Grades of B- or lower are failing for Neuroscience courses.**
2. Students must achieve grades of B- or better in all other core courses (currently Basic Science Core Course). Grades less than B- are failing.
3. A student must not receive more than **one** failing grade for all required courses during the entire training program.
4. In order to continue in the program, a student must pass Parts I and II of the Preliminary Exam at the end of the first year.

5.3 Remedial and Disciplinary Actions. Failure to satisfy these conditions will result in a thorough review of the student's entire performance in the Program, with a recommendation for dismissal a possible outcome.

A single failing grade of C, C+, or B- in a course may be remediated at the discretion of the GTC according to conditions developed in consultation with the course director. Usually this will consist of independent study by the student followed by a make-up exam. A lower grade than a C or the unavailability of satisfactory means of remediation will absolutely require the student to retake the course. In the case of remediation, no change of grade will be given. However, the student must achieve a passing grade (B or better) for any make-up exam. In addition, the course cannot be retaken if the student fails the make-up exam. Failure to remediate a course successfully or to pass a course on the second attempt will likely be cause for a recommendation of dismissal by the GTC to the Graduate School.

Unsatisfactory progress in dissertation work is cause for serious concern by the GTC. The Thesis Committee for each student, which meets with the student and mentor at least yearly (preferably every six months), will assess progress. The student is also strongly urged to meet informally with his committee members often to apprise them of progress made and discuss problems. If the Thesis Committee deems progress inadequate, the GTC will meet with the student, mentor, and Thesis Committee to ascertain whether the student is capable of continuing in the program. A recommendation of dismissal is a possible outcome of these deliberations. If the student is allowed to proceed further, an additional unsatisfactory assessment of thesis work will be cause for a mandatory recommendation for dismissal to the Graduate School without further review, subject only to appeal by the student (see below).

5.4 Further Conditions. All students are expected to complete their academic requirements according to the schedule as outlined in the Handbook. Unexcused failure to complete any requirement on time will be seriously considered by the GTC as a reason to recommend dismissal to the Graduate School.

In rare cases, the GTC may allow a student an additional opportunity to reverse deficiencies when otherwise they would be recommended for dismissal. In exchange for such consideration, the GTC may impose any additional academic requirements that they deem appropriate. Naturally, failure to satisfy these additional requirements will very likely result in a recommendation of dismissal to the Graduate School.

Continuing financial support by the Program is contingent on satisfactory academic progress as defined above. The Program and its faculty will normally support students on Graduate School probation or undertaking to correct academic deficiencies. However, support will automatically terminate 30 days after a recommendation of dismissal to the Graduate School.

5.5 Due Process. A student will have 7 days to appeal any decision of the GTC that affects them. Such appeals must be in writing and delivered to the Program Office. The GTC will respond to appeals within 7 days of receipt. Students will be given the opportunity to meet in person with the GTC to discuss their appeal if they so desire.

5.6 Further Appeals. Unchallenged decisions or decisions after appeal to the GTC regarding the correction of academic deficiencies are final. Decisions regarding recommendation for dismissal to the Graduate School may be appealed to the Dean of Graduate Studies as described in the Graduate Student Handbook.

5.7 Illness or Personal Problems. Students are encouraged to bring any problems that might affect their academic performance to the attention of any GTC member. This must be done **as soon as possible, preferably before such problems result in academic difficulties.**

6. Other Neuroscience Program Events and Related Activities

6.1 Neuroscience Seminar. During fall and spring semesters, all Neuroscience students are expected to attend the Neuroscience seminar (NRSC 7660). Speakers during the academic year include Neuroscience students, UCHSC faculty, and numerous invited guest speakers from other institutions. From time to time, students will be invited to luncheons or discussion sessions with these guests and are encouraged to take advantage of these opportunities to interact with top scientists from around the world. These are normally held between noon to 4 PM on Thursday in the Neuroscience Conference Room.

6.2 Neuroscience Annual Retreat. The Neuroscience Program holds an annual weekend retreat during the academic year to foster faculty-student interactions with lectures, poster sessions, and opportunities for informal discussions during meals and free time. The event provides an opportunity for faculty members to present brief overviews of the research being conducted in their labs, and for students to present posters showing their own research from lab rotations or thesis work. One visiting speaker from another institution is usually invited to give lectures.

The Neuroscience Program covers the cost of the retreat for first year Neuroscience students. Neuroscience faculty members may partially cover the retreat cost for themselves, graduate students, and postdoctoral associates in their labs who attend. Since time with family members may diminish the time available for interactions with faculty and students, the Neuroscience Program discourages family member attendance at this function.

6.3 Rocky Mountain Regional Neuroscience Group (RMRNG) and Front Range Neuroscience Group (FRNG). The RMRNG and FRNG are chapters of the Society for Neuroscience dedicated to promoting communication and interaction among area neuroscientists. The RMRNG is based in Denver and the FRNG is based in Fort Collins (CSU). You automatically are a member of the other group if you are a member of one. You do not have to be a member of the Society for Neuroscience in order to join the RMRNG or FRNG. Annual Neurosymposium are held in the spring and fall, including lectures by visiting speakers and members, a poster session, and evening banquet.

The Neuroscience Program will pay the membership fee for first year Neuroscience students who are interested in becoming members of RMRNG.

6.4 Opportunities for Student Research Presentations. The Neuroscience Program encourages students to present their research findings through various poster presentations throughout the year. The following is a list of student poster presentation opportunities and the approximate time of year each event is held:

Neuroscience Annual Retreat
Neuroscience Meeting Practice Session
UCHSC Student Research Day
Neuroscience Student Recruitment Weekend
RMRNG and FRNG

September/October
October
Mid-January
February
Varies

7. Neuroscience Program Promotion and Recruitment Activities

7.1 Publications and Acknowledgments. All student publications, including abstracts, journal articles, and theses, should acknowledge the Neuroscience Program along with other University acknowledgments. Students supported by the Neuroscience training grant should acknowledge the grant number in all publications. This is our best form of advertisement for our Program. Since we want our Neuroscience Library to include copies of all theses by our students, please be sure and provide one bound copy of the final version of your thesis to the Neuroscience Program at the same time you turn it in to the Graduate School. The Neuroscience Program will pay for the program copy to be bound.

After you leave the University, we want to keep up with your progress as a scientist. Please keep the Program informed as you continue with your postdoctoral work. From time to time, we may request that you send us your complete CV. This will help us document the success of our students for future grant proposals and renewals.

7.2 Participation in Recruitment Functions. During February/March each year, prospective student applicants visit our program for interviews. It is in the Program's best interest to attract and retain the best of these prospective students. To do this we need the help of current students and Neuroscience faculty who can convince these individuals that our Program is the place to be! When asked, please be willing to spend some time with prospective students during dinners or other functions. Our Neuroscience Program can flourish with your help.

8. Information for New Students

8.1 Mailing Address

The mailing address for Neuroscience Program is:

Director
Neuroscience Program, MS 8315
RC1N - P18
12800 E. 19th Ave., 7107
P.O. Box 6511
Aurora, CO 80045

Phone: (303) 724-3120
FAX: (303) 724-3121
www.uchsc.edu/neuroscience

The program office is located in the RC1, North Tower, in room P18-7107 at the Anschutz Medical Campus. Anschutz Medical Campus is located at 12800 East 19th Avenue, Aurora, CO 80045. (See mailing address above)

8.2 Housing. The Student Assistance Office (Office Annex 1C36, x. 5-7620) can provide apartment directories, rents, a computer search for available units, and roommate matching. They also have other

resources available on campus life and student organizations. A link to their web site is on our Neuroscience web site under the Resources tab.

8.3 Colorado Residency. If you are a U.S. citizen and not already a Colorado resident, you will need to change your residence status **prior** to fall semester of your second year. The Neuroscience Program will only pay out-of-state tuition during the first year. Please stop by the Admissions and Records Office **during the first few weeks of school in your first year** to ask for instructions on changing your residency or you can check <http://www.uchsc.edu/student/> webpage for instructions. Normally you must be able to establish physical presence in the state for a **full** year before being granted in-state status. **See the information provided by Admissions and Records for details.**

8.4 Payroll Paperwork. Before you can receive your stipend, you must fill out the appropriate paperwork with the Neuroscience Program and the payroll liaison. Note: An original social security card is required before you can be entered in the University payroll system. If you do not have an original card, you must apply for one **immediately** after you arrive. Be sure to get a letter from the clerk in the social security office stating that you have applied for a new card. A copy of this letter must be given to the Payroll and Benefits office before you can be paid. When your new card arrives, bring your card to the payroll liaison in the department so a photocopy of your card can be kept in your file.

Your stipend will be paid monthly on the last working day of the month (or as deemed by the State of Colorado). Appropriate taxes will be withheld from your pay, based on the withholding form you submit to payroll. If you want more details about what your net pay will be, contact payroll at (303) 735-6500 (Boulder).

8.5 Health Insurance. All students are required to be covered by health insurance. You must sign up for the University Student Health Insurance Program unless you have another plan in place and **specifically waive** the University plan. Before Fall semester each year, you will receive a form to fill out to select the student health plan or to waive it. Please notify the Neuroscience office if you plan to waive the student insurance. For more information on the plan and what it covers, contact Student Insurance, x. 5-0800. You may also go to the Neuroscience Program website www.uchsc.edu/neuroscience and click on the Resources tab.

Also, each student is responsible for making sure that s/he has health insurance coverage **each** semester. If a student registers for at least 5 credits or more, then s/he is considered a full-time student and University Student Health Insurance coverage is provided. Make sure you sign up for it with the Student Insurance office. The Student Health Insurance coverage is effective until August 31st each year.

8.6 ID Cards. You will receive a University ID Card at Graduate School or Neuroscience Program orientation. You will need this card for library privileges and building access after hours and weekends.

8.7 Course Registration. The current year's Course Book, showing the academic year calendar, deadlines, and course offering, can be picked up at Admissions and Records, or found on the University Graduate School website: www.uchsc.edu/gs/. Except for your first semester, you will need to register online. Gaining access to the online registration process can be found on the Student webpage at www.uchsc.edu. For your initial registration, you will register using a paper form. Please fill in the appropriate courses and bring the form to the Neuroscience office for the Director's signature.

Note: You are responsible for knowing registration and drop/ add deadlines each semester, and making sure you have registered on time. **Late registration results in a \$60 fine. The Neuroscience Program will not pay any late charges assessed because of missed deadlines! You will be responsible for paying any of these charges yourself.**

Note: **You must register for at least 5 credits to be considered a full-time student. A minimum of 5 credits are required in order to be eligible for University Student Health Insurance coverage. You must register for 1 credit in the summer in your second and above years.** (The coverage is effective until August 31 of each year)

8.8 Tuition Bills. A few weeks following registration, you will receive a tuition bill in the mail. Please bring these bills to the Neuroscience office for payment as soon as you receive them. **You will be personally responsible for any late charges if you do not bring your bill in before the payment deadline.**

8.9 Parking. Very little close-in parking is available on the 9th Avenue campus. Most students either walk, bike, or take the bus. If you must drive, contact the Parking Office at x. 5-5704 to find out where parking is available on campus. You may also take the free University shuttle from the 9th Avenue campus to the Anschutz Medical Campus. You will need your student ID to board. There is a monthly parking fee. To find out where to park at the Anschutz Medical Campus, go to the Parking Office in Building 500 on the ground floor across from the Information Desk. Discount RTD bus passes are also sold there. There are bicycle racks located conveniently to most of the buildings; however, you need to supply your own lock. You may also look at the Parking and Transportation website located at <http://www.uchsc.edu/facilities/parking/>.

8.10 Keys. The Neuroscience Program Administrator will make sure you are issued appropriate keys during your first week on campus. You will have access to the Neuroscience student rooms. To access the shared Conference Rooms, please contact the Program Administrator. Room keys are distributed at Anschutz Medical Campus in Building 500, second floor North wing. **All keys must be returned to the Work Control Center when you no longer need them or you will be charged \$50.**

8.11 Student Office and Study Space. First year students in the program have desk space allocated in the Neuroscience Student Room, in the North Tower, room P18-7102 and in P18-6107. Once a thesis lab is chosen, students are provided a desk space in their mentor's laboratory.

***** **END OF HANDBOOK** *****

This handbook does not constitute a contract with the University of Colorado Health Sciences Center School of Medicine, either expressed or implied, and the University reserves the right at any time to change, delete, or add to any of the provisions at its sole discretion. Furthermore, the provisions of this document are designed by the University to serve as guidelines rather than absolute rules, and exceptions may be made by the School of Medicine on the basis of particular circumstances.

Year 1. Checklist for Neuroscience Students

Year 1	Before start of classes		Orientation week	Hand in rotation initiation form to GTC chair, obtain assignment of GTC member for fall
			Orientation week	Register for fall (Mellodee Phillips) IDPT 7801, 7802, 7803 1050
	Fall semester		Coursework	NRSC 7600, 7650 (2 sections), IDPT 7801, 7802, 7803
			Seminar	Attend Neuroscience Seminar NRSC 7660
			September/October	Attend NSP retreat
			November	Rehearse seminar with assigned GTC member, give public rotation seminar. Hand in rotation initiation form to GTC chair, complete rotation lab evaluation, hand in to the NSP office
			Towards the end of the semester	Register for spring semester (Mellodee Phillips) NRSC 7650, 7610, 7615, 7661
			Seminar	Attend Neuroscience Seminar NRSC 7660
			February	Rehearse seminar with assigned GTC member, give public rotation seminar. Hand in rotation initiation form to GTC chair, complete rotation lab evaluation, hand in to the NSP office
			Two weeks before end of semester	Register for summer (Mellodee Phillips)
			Towards the end of the semester	Rehearse seminar with assigned GTC member, give public rotation seminar. Complete rotation lab evaluation, hand in to the NSP office
	Summer Semester		Mid-June	Take Preliminary Examination Parts I and II. Date is set by Graduate School
			June 15 th	Notify GTC Chair and Mellodee Phillips of choice of thesis advisor. Official transfer to thesis lab must take place by July 1 st .
			Two weeks before end of semester	Register for fall of second year: PHCL 7605 (1), NRSC 7650 (3-6). Optional: Elective (3-4) or NRSC 7670 (1)

Year 2. Checklist for Neuroscience Students

Year 2	Fall semester		Coursework	PHCL 7605. Optional: Elective or NRSC 7670
			Seminar	Attend Neuroscience Seminar NRSC 7660
			September/October	Attend NSP retreat
			September	Submit thesis proposal form (section 4.2.2 of handbook)
			Two weeks before end of semester	Register for Spring: NRSC 7650 (3-6). Optional: Elective (3-4) or NRSC 7670 (1)
	Spring semester		Coursework	Optional: Elective or NRSC 7670
			Seminar	Attend Neuroscience Seminar NRSC 7660
			Towards beginning of semester	Schedule date for comprehensive examination in summer. Note: Students must have registered for or completed a minimum of 30 coursework/research credits at the time of comps.
			Before end of semester	Choose members of Comprehensive Examination Committee, have committee membership approved by GTC.
			Two weeks before end of semester	Register for summer. Research in Neuroscience (1 unit)
	Summer semester		At least two weeks before comprehensive	Give written comprehensive proposal to members of Comprehensive Examination Committee
			Sometime in summer semester	Defend Comprehensive Examination (public seminar followed by closed door examination)
			Two weeks before end of summer	Register for fall: NRSC 8990 (1-10). Optional: Elective (3-4) or NRSC 7670 (1)

Note: If you register for at least 5 credits (and one credit in the summer for second year and above), then you are considered a full-time student and your University Student Health Insurance coverage is provided. It is essential that you contact Student Insurance at x 5-0800 and complete the form requesting health insurance for that semester in which you are registered. You may also waive the coverage if you are covered through another plan; however, you must contact the Student Insurance office to waive coverage.

Year 3 and Beyond. Checklist for Neuroscience Students

Note: Students must have registered for or completed a minimum of 60 coursework/research credits at the time of thesis defense (not including 8990).

Year 3 and beyond	Fall semester		Coursework	NRSC 8990 (1-10) Optional: Elective or NRSC 7670
			Seminar	Attend Neuroscience Seminar NRSC 7660
			September/October	Attend NSP retreat
			Two weeks before end of semester	Register for spring: NRSC 8990 (1-10). Optional: Elective (3-4) or NRSC 7670 (1)
	Spring semester		Coursework	NRSC 8990 (1-10) Optional: Elective or NRSC 7670
			Seminar	Attend Neuroscience Seminar NRSC 7660
			Two weeks before end of semester	Register for summer. NRSC 8990 (1 unit)
	Summer semester		Two weeks before end of summer semester	Register for fall: NRSC 8990 (1-10). Optional: Elective (3-4) or NRSC 7670 (1)
	Once per year			Give public presentation during regular NSP seminar (arrange time with Seminar Committee Chair)
	Twice a year			Meet with thesis advisory committee. After the meeting, get thesis committee meeting evaluation form and give copies to GTC Chair and to NSP Administrator

Note: If you register for at least 5 credits, then you are considered a full-time student and your University Student Health Insurance coverage is provided. It is essential that you contact Student Insurance at x 5-0800 and complete the form requesting health insurance for that semester in which you are registered. You may also waive the coverage if you are covered through another plan; however, you must contact the Student Insurance office to waive coverage.

Recruitment & Admissions Committee

Tom Finger, Co-Chair
Katie Rennie, Co-Chair
Les Krushel
Christy Cortez (Student)
Matt Pink (Student)

Membership Committee

Kim Heidenreich, Chair
Rock Levinson
Ken Tyler
Steve Britt

Graduate Training Committee

Sukumar Vijayaraghavan, Chair
Kurt Beam
Manisha Patel
Diego Restrepo
Celia Sladek
David Gire (Student)

Curriculum

Nathan Schoppa, Chair
Tom Finger
Lee Niswander
Angie Ribera
David Gire (Student)
Katherine Barlow (Student)

Steering Committee

Diego Restrepo
Kim Heidenreich
John Caldwell
Tom Finger
Katie Rennie
Sukumar Vijayaraghavan
Dan Tollin
Nathan Schoppa

Seminar Committee

John Caldwell, Chair
Tom Finger
Celia Sladek
Staci Sanford

Neuroscience Retreat Committee

Dan Tollin, Chair
Nathan Schoppa, Past Chair
Linda Barlow
Monique Beaudoin (Student)
David Gire (Student)
Dianna Bartel (Student)
Joshua Ohrtman (Student)
David Cantu (Student)
Tianna Hicklin (Student)
Jonah Scott-McKean (Student)
Heath Jones (Student)

Research Affinity Groups of UCHSC Neuroscience Program Faculty

Developmental Neurobiology

Kristin Artinger
Linda Barlow
Steve Britt
John Caldwell
Stephen Davies
Tom Finger
Curt Freed
Kim Heidenreich
Lee Niswander
Karl Pfenninger
Angeles Ribera
Nick Seeds
Dan Tollin
Margaret Wierman
Mike Zawada

Cellular Neurobiology

Ulli Bayer
Kurt Beam
Tim Benke
Bill Betz
Mike Browning
Stephen Davies
Mark Dell'Acqua
Tom Finger
Curt Freed
Kim Heidenreich
Les Krushel
Manisha Patel
Karl Pfenninger
Diego Restrepo
Nathan Schoppa
Nick Seeds
Celia Sladek
Sukumar Vijayaraghavan
Bruce Wallace

Ion channels and Receptors

Ulli Bayer
Kurt Beam
Bill Betz
Steve Britt
Mike Browning
John Caldwell
Mark Dell'Acqua
Rock Levinson
Anne-Laure Perraud
Katie Rennie
Angeles Ribera
Bill Sather

Nathan Schoppa
Celia Sladek
John Stewart
Sukumar Vijayaraghavan
Nancy Zahniser

Neural Stem Cells

Kristin Artinger
Kim Bjugstad
Stephen Davies
Curt Freed
Diego Restrepo
John Sladek
Margaret Wierman

Neuropharmacology

Ulli Bayer
Alberto Costa
Mark Dell'Acqua
Curt Freed
Robert Freedman
Les Krushel
Sherry Leonard
Manisha Patel
Bill Sather
James Sikela
Celia Sladek
Sukumar Vijayaraghavan
Nancy Zahniser

Sensory Systems

Kristin Artinger
Linda Barlow
Steve Britt
Alberto Costa
Tom Finger
Katie Rennie
Diego Restrepo
Angeles Ribera
Nathan Schoppa
Dan Tollin
Sukumar Vijayaraghavan

Synapses, E-C Coupling and Neuromodulators

Ulli Bayer
Kurt Beam
Tim Benke
Bill Betz
Mike Browning
Alberto Costa
Mark Dell'Acqua
Tom Finger
Les Krushel

Diego Restrepo
Nathan Schoppa
Celia Sladek
Sukumar Vijayaraghavan
Bruce Wallace

Molecular and Cellular Basis of Neural Disease

Ulli Bayer
Tim Benke
Kim Bjugstad
Mike Browning
Alberto Costa
Stephen Davies
Curt Freed
Robert Freedman
Kim Heidenreich
Sherry Leonard
Lee Niswander
Manisha Patel
Diego Restrepo
Nick Seeds
James Sikela
John Sladek
Dan Tollin
Ken Tyler
Margaret Wierman
Mike Zawada
Nancy Zahniser

GRADUATE SCHOOL POLICY FOR VACATION AND LEAVE FOR PH.D. STUDENTS

Graduate school is a privilege; working in the biomedical research/academic field, whether as a graduate student, a postdoctoral fellow, or an independent investigator, is a time-honored and challenging profession that requires a high level of commitment and responsibility. Students who receive full-support stipends from UCHSC Ph.D. programs are required to pursue their training on a full-time basis, devoting each day of the normal work week, plus any additional time required by their research projects and academic courses. Additionally, for a student to maintain full-time student status, the following guidelines for vacation and leave time have been established by the Graduate School. These represent the leave to which a graduate student is entitled; however, research demands and commitment to graduate studies often result in students using less than the allotted leave. Individual graduate programs might not have a formalized system for accounting for vacation and sick leave; if so, vacation and leave monitoring falls under the honor system and is the responsibility of the student.

Vacation and Holidays. Graduate students shall receive all University holidays and no more than 14 calendar days (counting all days Monday through Sunday) of vacation per annum, with no year-to-year accrual. Students shall continue to receive stipends during vacations and holidays. In the graduate school at UCHSC, the times between academic terms and the summers are considered active parts of the training period and are not necessarily free times. However, students taking courses are expected to attend all classes and take all exams as scheduled. They should not take vacations when classes or exams are scheduled. For advanced students, vacation time should be arranged with the dissertation advisor.

Sick Leave and Other Leave. Graduate students may continue to receive stipends for up to 15 calendar days (counting all days Monday through Sunday) of sick leave per annum, with no year-to-year accrual. Under exceptional circumstances, additional sick days may be granted following a written request and approval by the student's program director. Sick leave may be used for the *medical* conditions related to pregnancy and childbirth.

Parental Leave – Graduate students may also receive stipends for up to 30 calendar days (counting all days Monday through Sunday) of parental leave per annum for the adoption or the birth of a child. Either parent is eligible for parental leave. Parental leave must be approved by the student's program director. Sick leave may not be used to supplement parental leave, except as noted above.

Unpaid Leave – Individuals requiring more than 15 calendar days of sick leave or more than 30 calendar days of parental leave, must seek approval from their program for an unpaid leave of absence. Approval for a leave of absence must be requested in advance by the student and approved by the program. The leave period and conditions must be documented, both at the time of leave and at the time of re-entry into the program. A copy of this agreement must be submitted to the Graduate School.

Termination – Upon graduation or termination a graduate student forfeits all unused annual and sick leave; payment may not be made from grant funds (training grants or research grants) for leave not taken.

**CONFLICT OF INTEREST POLICY FOR GRADUATE STUDENTS
WHO HOLD OTHER POSITIONS AT UCHSC**

Graduate students may hold employment positions within the Health Sciences Center in addition to their positions as graduate students at UCHSC. When this situation occurs, there is the potential for conflicts of interest to arise. This policy governs such situations.

- 1) A graduate student may not also be a regular faculty member (Instructor or above) in the same program in which s/he is enrolled as a student.
- 2) If two individuals exist in a student-faculty relationship in a graduate program, they may not both hold faculty (Instructor or above) appointments in the same graduate program, even though that graduate program is different from the one in which the student is enrolled.
- 3) Recent graduates can be granted a graduate faculty appointment in the graduate program from which they graduated. In this situation, the new faculty member must not *direct* courses taken by individuals who were students when the new faculty member was also a student. (In programs where independent student cohorts exist, then the new faculty member must not direct a course taken by students from his/her cohort.) The new faculty member may not serve on an examination committee of any individual who was a student in the program (regardless of cohort) when the new faculty member was still a student.
- 4) A faculty member who employs a graduate student as a PRA:
 - a) Can be an “in” graduate faculty member of the student’s program and can serve on the student’s graduate degree examination committee(s) with the approval of the Graduate Program Director; or
 - b) Can serve as an additional (but not sole) “outside” graduate faculty member of the student’s program and examination committee with the approval of the Graduate Program Director; but
 - c) Cannot serve as Chair of the student’s examination committee(s).
- 5) Despite the allowable participation on examination committees described above (#4), the Graduate School discourages such involvement and suggests that the employer not serve on the committee, but attend all committee meetings as an invited guest.